



# Verizon 5G Extender TR1V1 User Guide

Version 1





## Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**WARNING.** This is **NOT** a **CONSUMER** device. It is designed for installation by **FCC LICENSEES** and **QUALIFIED INSTALLERS**. You **MUST** have a **FCC LICENSE** or express consent of a FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.



## **RF Exposure Statement**

To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 31 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.



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## Chapter 1 Introduction

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This chapter includes a list of items included with the TR1V1 5G Extender and a description of the user interface and ports on the device.

### 1.1 Unboxing Information

Inside the product package for the TR1V1 5G Extender, you should find the following items:

- Extender
- AC adapter
- Window mounting bracket
- One alcohol swab
- Cable ties
- Cable clips (with adhesive)
- Window wedges (with adhesive)
- Anchors and metal screws for wall mounting
- Installation location labels (with adhesive)



Cable clips



Window wedges



Cable tie

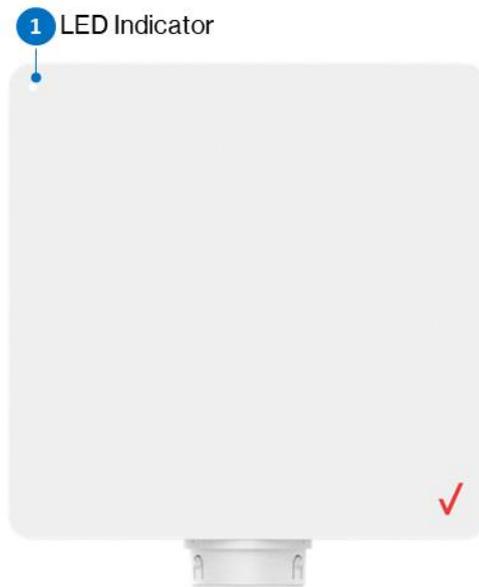


Wall screw



Wall anchor

## 1.2 Front Panel



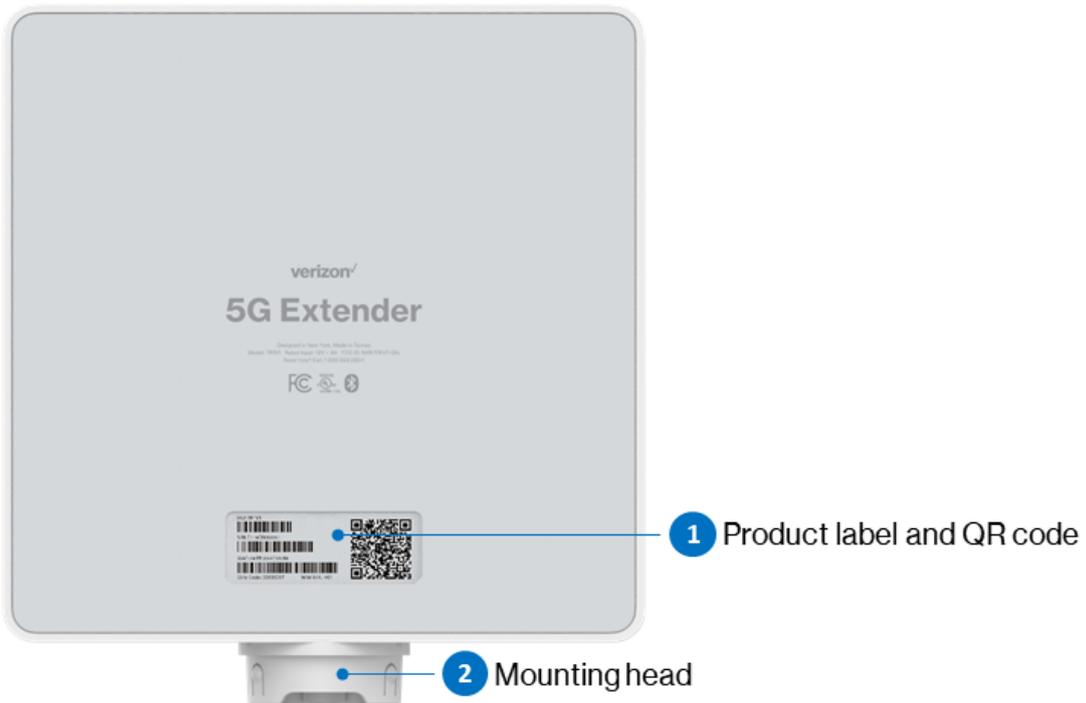
An LED indicator is located in the top-left corner of the Extender's front panel.

### LED Light Guide

<i><b>Device Status</b></i>	<i><b>Description</b></i>	<i><b>LED Status</b></i>
<b>Booting up</b>	The Extender is powered and in the process of booting up.	Solid: White
<b>Ready to pair</b>	The Extender is ready to be paired with the 5G nodes.	Blinking: Blue
<b>Ready to scan</b>	The Extender is connected to the 5G nodes.	Solid: Blue
<b>Scanning</b>	The Extender is scanning the signal strength from the 5G nodes.	Soft Blink: White
<b>Paired: Good Signal</b>	The signal strength from the 5G nodes is good.	Solid: Green
<b>Paired: Poor Signal</b>	The signal strength from the 5G nodes is poor.	Solid: Yellow

<b>Paired: No/Bad Signal</b>	There is no signal from the 5G nodes.	Solid: Red
<b>Regular usage</b>	The Extender is working normally.	Off
<b>Error</b>	An error has occurred (ex. pairing/FW issue)	Blinking: Red
<b>FW Update / Reset</b>	The Extender is ready to reboot after a FW update.	Fast Blink: White (Occurs during the 2 seconds prior to reboot/power off)

### 1.3 Back Panel



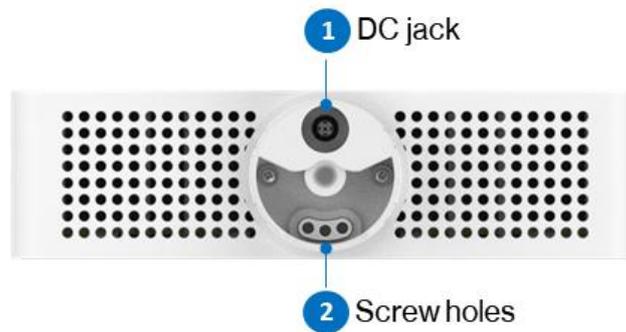
1. Product label and QR code

Scan the QR code on this label with the Installer app to enable the receiver to establish a connection with the Extender.

2. Mounting head

The mounting head fits into the installation slot on the mounting bracket.

## 1.4 Bottom Panel



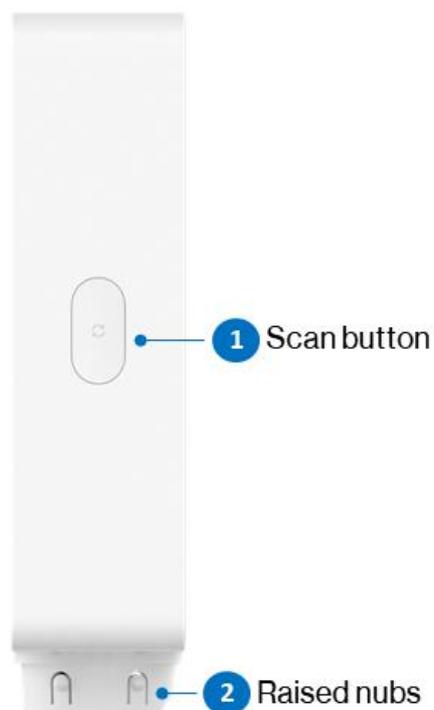
### 1. DC jack

Plug the AC adapter into this jack to power the Extender.

### 2. Screw holes

The securing screw for the mounting bracket should be fastened into one of these holes.

## 1.5 Side Panel



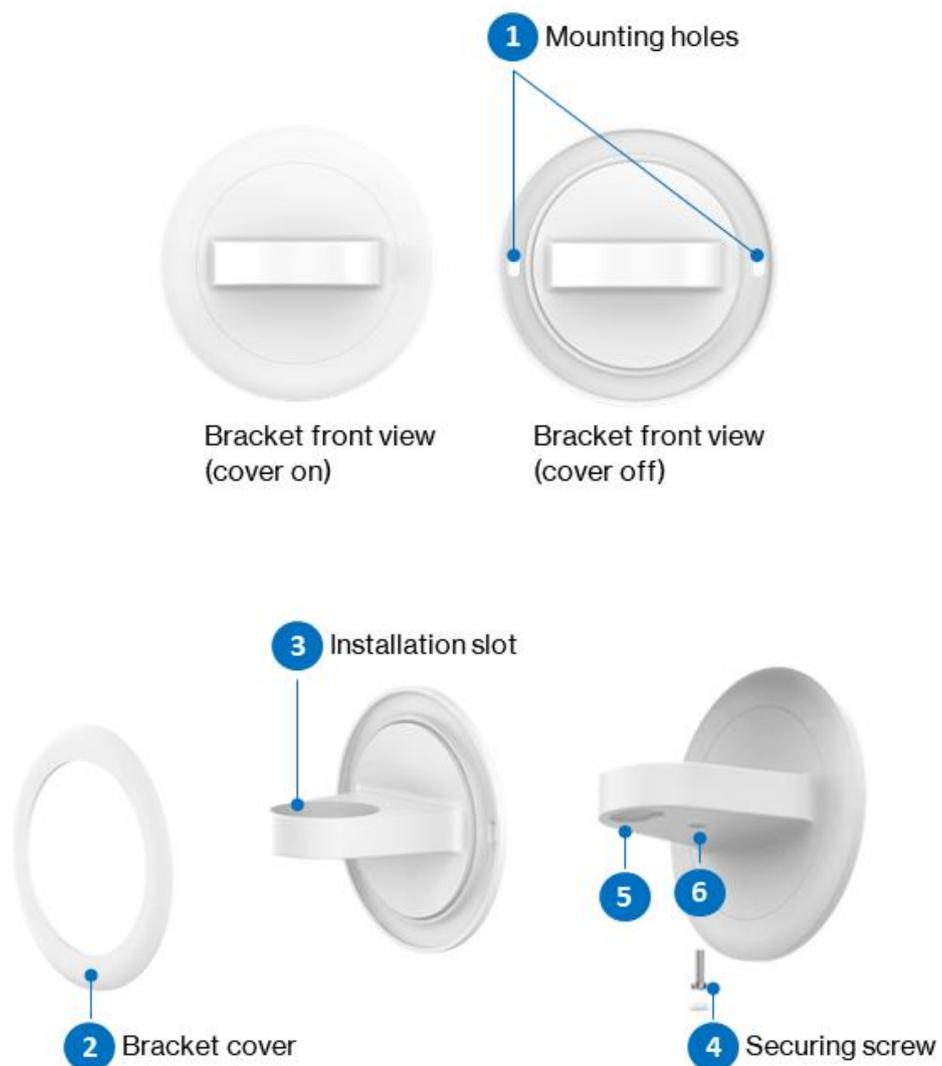
## 1. Scan button

Use this button to scan for 5G signals from 5G nodes located outdoors.

## 2. Raised nubs

The raised nubs on the mounting head fit into the dimple holes on the inside of the mounting bracket's installation slot.

### 1.6 Mounting Bracket



## 1. Mounting holes

Wall screws are screwed through these mounting holes during wall installation.



2. Bracket cover

This cover is attached to the top of the bracket's base. Remove the cover before attaching the mounting bracket to a wall.

3. Installation slot

Install the mounting head of the Extender into this slot. Once installed in this slot, the Extender can be rotated to either the left or to the right if the central position is not adequate for performance purposes.

4. Securing screw

Once the desired alignment for the Extender is found, this screw is used to ensure that the Extender is securely attached to the mounting bracket.

5. Hole for AC adapter

This hole enables the cable from the AC adapter to connect to the DC jack when the Extender is installed on the mounting bracket.

6. Hole for securing screw

This hole should be aligned with one of the screw holes on the mounting head of the Extender.

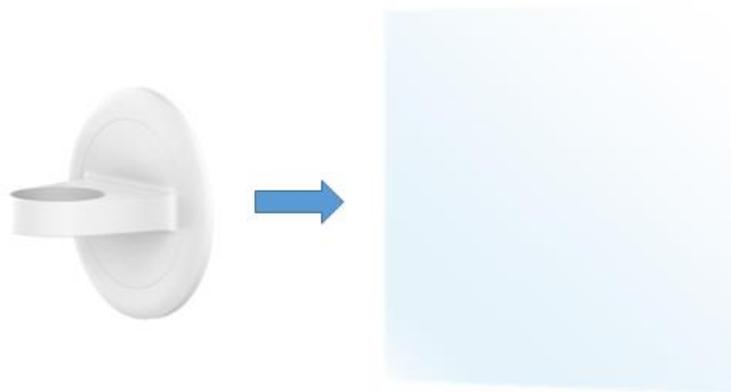
## Chapter 2

### Mounting the 5G Extender

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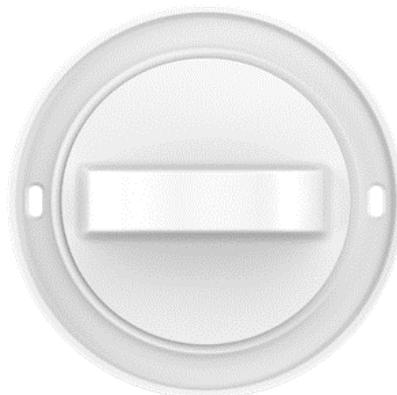
This section describes how to mount the 5G Extender onto window glass or walls.

#### 2.1 Window Mounting



1. Use the provided alcohol swab to clean the area around the label, and wait for the alcohol to dry.
2. Peel off the protective backing on the Gecko Tape on the base of the mounting bracket, then affix the bracket onto the labeled area on the window. Follow the instructions printed on the protective backing of the Gecko Tape to ensure the bracket is securely affixed.

Note: When attaching the mounting bracket, make sure it is oriented in the manner shown in the image below (with the opening of the mounting slot facing up).



Note 2: Do not attach the mounting bracket onto slanted windows.



3. Once the bracket is securely affixed to the window, align the mounting head on the Extender with the installation slot on the bracket, then push down on the Extender to insert the mounting head into the slot. Adjust the alignment of the Extender as required (make sure the raised nubs on the mounting head fit into the dimple holes on the inside of the slot, and that the hole for the DC jack is aligned with the hole for the AC adapter on the bottom of the slot).
4. Once the desired alignment is achieved, use a screwdriver to screw the securing screw through the designated hole on the bottom of the installation slot and into one of the screw holes on the mounting head of the Extender. Make sure the screw is screwed in tightly and is not loose.



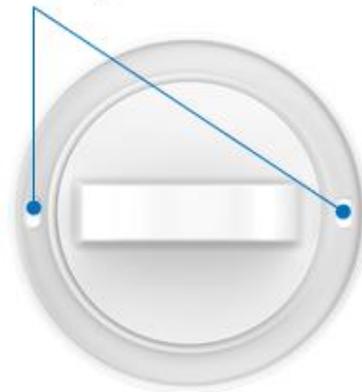
5. Use the provided cable clips for cable management. You may also install the provided window wedges to prevent sliding windows from colliding with the installed Extender.
6. To remove the mounting bracket from window glass, first unplug the AC adapter from the DC jack. Afterwards, use a prying tool or other suitable flat object (such as a flathead screwdriver) and use it to pry the mounting bracket off the window by carefully wedging it between the window glass and the Gecko Tape.

## 2.2 Wall Mounting

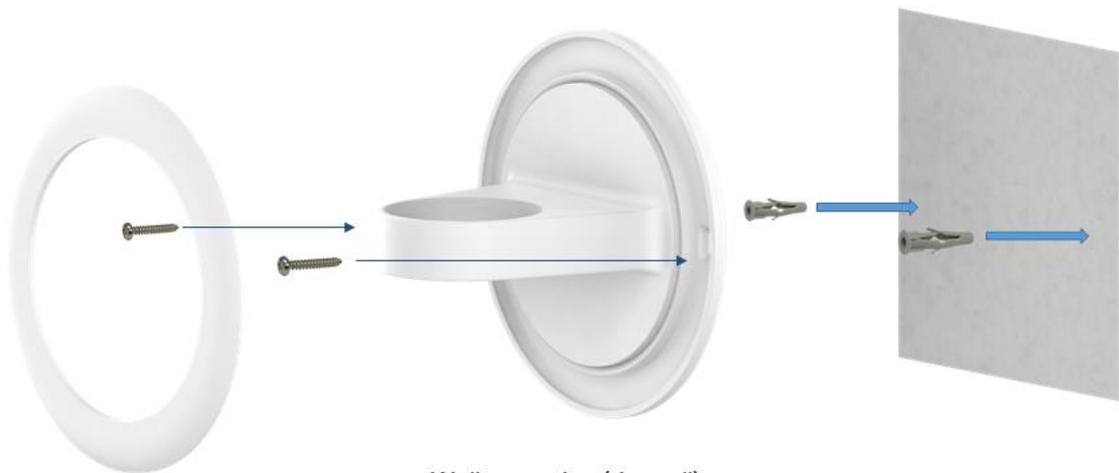
Note: The Extender can only be mounted on drywall or wooden walls.

1. Find a location on the wall near where the installation location label is placed. Peel off the protective backing on the Gecko Tape on the back of the mounting bracket, and remove the cover on top of the bracket base. Afterwards, place the mounting bracket against the wall at the aforementioned location using the same alignment used for window installation.
2. Use a pencil to mark the points on the wall directly under the center of the two mounting holes of the mounting bracket.

While the bracket is against the wall, use a pencil to mark these locations.



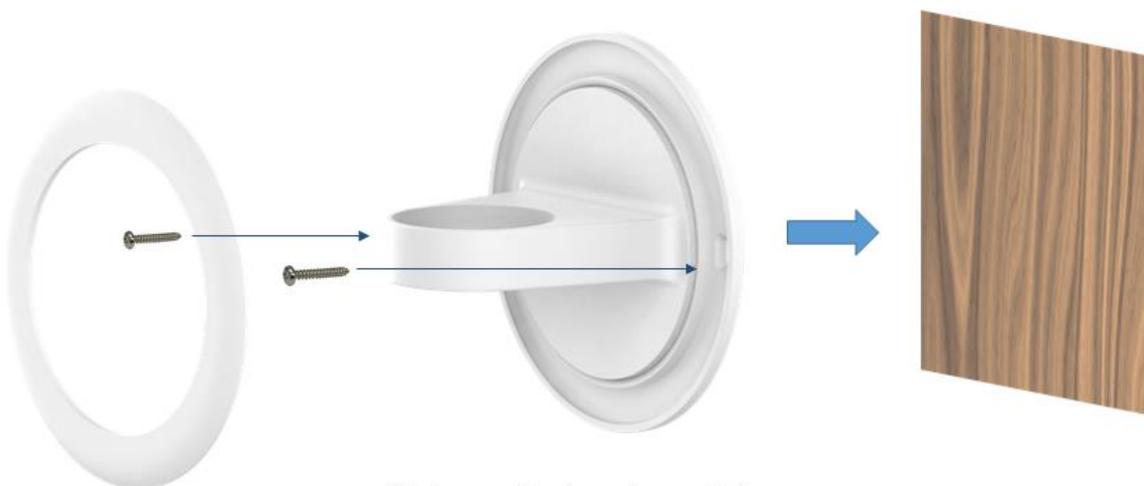
3. For installation on drywall, after completing the steps in item 2, move the bracket off the wall. Use a power tool to drill pilot holes at the marked points (Note: the diameter of the pilot holes must be smaller than the diameter of the included wall anchors), then push the anchors into the pilot holes until they are flush to the wall. Afterwards, align the center of the two mounting holes of the mounting bracket with the anchors, then use a screwdriver to slowly screw the included metal wall screws into the anchors until the bracket is securely fastened.



Wall mounting (drywall)

4. For installation on wooden walls, after completing the steps in item 2, use a power tool and slowly screw the included metal screws into the marked points until the bracket is securely fastened.

Note: Do not install the mounting bracket onto slanted walls.



Wall mounting (wooden walls)

5. Once the bracket is securely fastened to the wall, align the mounting head on the Extender with the installation slot on the bracket, then push down on the Extender to insert the mounting head into the slot. Adjust the alignment of the Extender as required (make sure the raised nubs on the mounting head fit into the dimple holes on the inside of the slot, and that the hole for the DC jack is aligned with the hole for the AC adapter on the bottom of the slot).



6. Once the desired alignment is achieved, use a screwdriver to screw the securing screw through the designated hole on the bottom of the installation slot and into one of the screw holes on the mounting head of the Extender. Make sure the screw is screwed in tightly and is not loose.
7. Use the provided cable clips to conduct cable management.

## Chapter 3

### Product Specifications

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#### Hardware Specification

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- Support Frequency Band: n261 (27.5–28.35 GHz)
- Separated TX & RX antenna arrays
- Antenna array
  - 32 elements at donor side
  - 2 antenna panels at relay side, each has 4 elements
- Peak EIRP at P1dB
  - Donor 46 dBm
  - Relay 28 dBm
- Micro-controller and Memory
  - SPI NOR Flash
- BLE 4.2
- DC Jack for 12 V/4 A power adapter
- One RGBW LED
- Buzzer × 1
- Operating Temperature: 5°C to 40 °C
- Dimension: 181.5 mm × 181.5 mm × 49 mm
- Weight: 1.2 kg

#### Environmental

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- Operating Ambient Temperature: 5 °C to 40 °C
- Operation Relative Humidity: 5% to 90% non-condensing
- Storage Temperature: –45°C to 70°C
- Shipping and Storage Relative Humidity: 5% to 85%